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OVARIAN TUMOURS SIMULATING INFLAMED OVARIES, INCLUDING A CASE OF OVARIAN MYOMA.

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In these days when medical education is well diffused, and ovariotomy widely undertaken by general surgeons, the diagnosis of an ovarian tumour is seldom deferred till dangerous complications have set in, and few surgeons shrink from operating as soon as the tumour has been detected. Experience shows that, as a rule, an ovarian tumour gives no trouble when it is small, complications rarely beginning till some time after it has risen above the pelvis. At the same time, a tumour of this kind is best removed when it is diagnosed, for, the earlier the ovariotomy, the less will be the risk.

On the other hand, the hasty removal of swollen inflamed ovaries is greatly to be deprecated. Taking into consideration certain familiar symptoms, a tender, more or less movable, body in Douglas's pouch usually proves to be an inflamed ovary; and, as a rule, it will cease to be tender after appropriate medical treatment. But it sometimes happens that an ovarian tumour in its earlier stages, before it rises into the abdomen, may become tender, or that pelvic symptoms, really due to inflammatory changes in the uterus or opposite ovary, may interfere with diagnosis. I have come across a considerable number of such cases in my own operative practice. I will set aside instances of more or less fixed sessile pelvic cysts, including such as, when menorrhagia and elongation of the uterine cavity are present, simulate uterine fibroid. I will confine myself to six cases where there was in each instance an enlarged ovary, and where before operation the cause of enlargement was not clear, though the suspicion of a new growth justified exploration.

The question of diagnosis is important, and the consultant in

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these cases finds himself in a difficult position. Last year, after taking part in some consultations on disputed cases, I looked up some of my own records, and prepared a few notes. In searching through recent medical literature, I found that my work had been to a certain extent anticipated in an excellent article on ten cases of small ovarian tumours, prepared by Dr. Davenport of Boston, U.S.[1] The clinical notes, however, are not so complete as might be desired, the pelvic examination, a most important matter, being imperfectly recorded. I have selected six cases only, from my own practice, after rejecting a considerable number where there remained ~~small~~ doubt as to whether the cystic degeneration of the ovary represented a true neoplasm.

In the first case, an incipient ovarian cyst gave pain as in simple inflammation of the ovary, through being incarcerated in Douglas's pouch.

Case 1.—E. H., æt. 35; married fifteen years, three children; last confinement, twelve years; no abortions. For two years, almost constant abdominal pain. For three weeks severe pain in abdomen. Period regular, four-weekly, always *scanty*; pain on last three occasions.

Abdomen distended by flatus. Uterus usually fairly movable; a small *tender* oval body to the right of the cervix, and a large *tender* body to the left; its surface felt irregular.

Operation, 11*th Feb.* 1891.—The left ovary formed a characteristic cystoma as large as a hen's egg. Papillomatous growths were found on its inner wall. It lay in Douglas's pouch, incarcerated as it were by the utero-sacral ligaments. The right was smaller, but also cystic. Both ovaries were removed. There was not a trace of any adhesion. I saw the patient six years later; no sign of any period had ever been seen since the operation. For two or three years she suffered from flushing of the cheeks, headaches, etc., as at the true menopause. I have found that the dread of an "operative" menopause has been much exaggerated, though it must be taken into account.

In this case there was distinct tenderness, as is so frequent in inflammatory disease of the ovary; whilst hundreds of ovarian cysts develop in the pelvis, and rise above its brim without becoming painful. The cause of the unusual pain seemed to be the incarceration of the tumour. The utero-sacral ligaments sometimes grip an exogenous cyst, projecting from the lower part of a large ovarian tumour; and the same accident may happen to a pedunculated myoma of the uterus. It is, however, quite unusual for an entire cystoma of the ovary to be incarcerated in this manner. The utero-rectal muscles which run in the borders of the utero-sacral ligaments are clearly too weak to resist the upward advance of most tumours which develop in the deepest

[1] "The Diagnosis of Small Ovarian Tumours," *Boston Med. and S. Journ.*, 1896, vol. cxxxv. p. 353.

part of the pelvis;[1] in this instance it was apparently otherwise. It is a factor to be remembered, and I suspect that it often aggravates the pain when an inflamed ovary slips into Douglas's pouch.

The ovary was undoubtedly the seat of a true tumour, which had developed in the hilum, and, as is the rule under such conditions, it was papillomatous, and pushed the normal ovarian tissue aside instead of absorbing it.[2] In short, it was neoplastic, and not inflammatory.

The absence of menorrhagia rather favoured the diagnosis of a tumour. In the next case the trouble was due to a juvenile dermoid.

Case 2.—M. M., æt. 44; widow; last confinement thirteen years. She had suffered for nearly a year from severe pain, distinctly referred to the right side of the pelvis. The attacks were accompanied with dysuria. Catamenia perfectly regular, show moderate.

On 26th February 1892 I made a note, "Uterus small; to left is a soft tender body, apparently adherent to pelvic wall." On 11th April, same year, "The tender body is about double the size it had obtained in February, and can be pushed upwards."

Operation, 14*th April* 1892.—I removed a cystic tumour 3 in. in diameter; it had developed in the left ovary, and was absolutely free from adhesions. It contained 3½ oz. of pale yellow fat, mixed with hairs. The pedicle was narrow and rather short; it was not twisted. The right ovary and uterus were quite healthy and free from adhesions. The catamenia remained regular till just three years after the operation; then they ceased abruptly, when the patient was 47, never to return. Last autumn there was no evidence of any morbid change in the right ovary.

Severe pain and a soft tender body were the principal clinical features in this case. As in the last, I could not feel sure whether the swelling was a new growth or an ovary subject to purely inflammatory changes. Pain in the pelvis, referred to the side opposite to the seat of disease, is quite common in chronic oöphoritis. It was not necessarily due to the uterus being pushed laterally by the swollen or cystic ovary, as displacements from that cause do not specially accompany this curious symptom. As for the severe attacks, with dysuria, it is possible that they were due to occasional rotation of the pedicle. Ovarian dermoids are subject to this complication, even when they are small, and clinical histories indicate that partial rotation may be reversed, the pedicle once again lying normally.

[1] No doubt many ovarian cysts never sink so low, but rise out of the pelvis almost from the first.

[2] This condition is demonstrated in a similar specimen which I described some time ago, in a paper on "Papillary Cysts of the Ovary," *Trans. Path. Soc. London*, vol. xxxiii. Plate ix. Figs. 2 and 3. The cyst described above is preserved in the museum of the Westminster Hospital, Series "Morbid Anatomy and Pathology," No. 1030. See footnote, Case 4.

The main truth was that the swelling proved to be a true neoplasm, for an ovarian dermoid cannot be looked upon as in any sense a product of an inflammation.[1]

I spared the opposite ovary, and the disease had not recurred over five years after the operation. Pfannenstiel[2] condemns all healthy ovaries, fellows of cysts, and solid tumours, in patients over 40; but, at least in the case of dermoids, his principle may be questioned.

The next case is an instance of hæmorrhage into the ovaries, which may occur both in oöphoritis and in cystoma of the ovary.[3]

Case 3.—Mrs. H., æt. 25; single. For a year she had been under the care of Dr. J. Williams, of Connaught Street, W., on account of pain in the loins and left iliac fossa; dysuria was marked. The catamenia appeared nearly every two weeks, with free show; small clots occasionally passed, with much pain. The temperature rose to 99°·8 at night on several occasions.

Uterus pushed to the left, cavity 3 in. Left appendages tender, swollen, fixed, and lying in Douglas's pouch; a swelling in right fornix.

Operation, 12*th Dec.* 1895.—The right ovary was converted into a cyst containing 4 oz. of tarry blood; the tube and mesosalpinx were quite healthy. The left ovary was also cystic and full of blood, with a sound tube and sound ligament. It was strongly adherent to the pelvic structures. Both appendages were removed. Nine months later, the patient, who had never menstruated since both her ovaries were removed, was in fair health. There were flushings and insomnia, but though the patient had been neurotic for several years, the premature menopause was not marked by severe symptoms.

Here there was marked menorrhagia, and inflammation assuredly existed, but the uterus was involved,[4] and the free discharge of blood from its cavity possibly had little or nothing to do with the cysts. The ovaries, as I found on examination, were primary

[1] A follower of Küster might speculate as to what would have happened had the operation been deferred for a few months. That observer believes that a dermoid tends to rise in front of the uterus, and to lie well in the middle line, so that if displaced sideways or downwards it rapidly slips back to its favourite site. Mandelstamm (*Gynécologie*, 1896, p. 179) attributes this alleged peculiarity to the lightness of a dermoid. But a heavy fibroma of the ovary may lie in front of the uterus.

[2] "Ueber Carcinombildung nach Ovariotomien," *Ztschr. f. Geburtsh. u. Gynäk.*, Stuttgart, 1894, Bd. xxviii. He emphatically repeats the above statement in his treatise on "Die Erkrankungen des Eierstocks und des Nebeneierstocks," in Veit's "Handbuch der Gynäk.," 1898, Bd. iii. part 1, S. 486.

[3] In Davenport's Case 4, there was hæmorrhage into a cyst; in Case 9, a hæmatoma of one ovary, its fellow being cystic.

[4] Davenport notes, in relation to his own cases: "There seems to be a direct causal connection between severe uterine hæmorrhage and cystic ovaries which are closely adherent to the uterus." The left ovary adhered in this case, but the condition of the uterus explained the menorrhagia. In the main, Davenport's experience agrees with my own.

cystomata, but had clearly become inflamed later on; hence, probably, the hæmorrhage into the cavities of the cysts. These bleedings are not rare in oöphoritis; thus, clinically and anatomically, a small inflamed cystoma may be hard to distinguish from an inflamed ovary.

Between inflammation and neoplastic growth lies papillomatous degeneration, of which the next case is an instructive example.

Case 4.—S. B., æt. 28; married eleven years; miscarried two years previously, and a parametric abscess burst above the right groin. A hernia developed, and ultimately gave great trouble. For seven weeks before I saw her she complained of pain in the *left* iliac fossa. The catamenia were regular, four-weekly; the show always scanty; the last three periods were unusually painful. On 6th March 1896, I detected a large tender swelling in the *right* fornix, pushing the uterus to the left. I kept her at rest for a while, and on 5th July 1896 operated, with the intent of repairing the hernia only, as the pelvic swelling had grown less after rest, so I concluded that it represented a purely inflammatory condition, which had almost subsided.

The hernial pouch proved very difficult to excise; I have described the process elsewhere.[1] In the course of the operation I fortunately explored the pelvis. Then I found that the appendages were extensively diseased on both sides, the tubes were dilated, the ovaries cystic. There was papillomatous degeneration of the left tube, and papillomatous growths in the interior of the cyst which made up the right ovary. I removed both appendages. The patient was free from all pelvic pain eighteen months after the operation, yet she continued to menstruate, although the total removal of both ovaries was easily effected.

Here it is clear that the disease was of inflammatory origin, probably dating from the abortion. Yet there was no menorrhagia; on the contrary, the catamenia were scanty. I have found that papillomatous degeneration, the result of inflammation, may be the origin of an exuberant papillomatous tumour, which in turn may become cancerous.[2] Indeed, primary cancer of the Fallopian tube seems as though it usually arose in this manner; whilst the surgeon must not hesitate to remove a cystic ovary containing papillomata, whatever the growths may mean. I admit that the diffused papillary masses sometimes found free in the pelvis and abdomen have been known to prove clinically innocent, to the great satisfaction of operator and patient. In such a case these are probably pure products of inflammation, and an exploratory incision cures it, just as it cures tubercular peritonitis—how we are not precisely certain. Still, a removable papilloma should always be removed,

[1] "Hernia of the Abdominal Cicatrix, and Operations for its Cure," Case 3, *Lancet*, London, 1897, vol. ii. p. 1379.

[2] I have discussed this question in a treatise on "Diseases of the Fallopian Tubes" in Allbutt and Playfair's "System of Gynæcology." These papillomata are pathologically quite different from papilloma of the hilum, as in Case 1 of the above series. The latter arises from vestigial relics.

especially when situated in the ovary or tube, for reasons just explained.

In the following case there was uterine inflammation from retained portions of placenta, and an incipient ovarian cyst, which could not readily be distinguished from a swollen inflamed ovary.

Case 5.—E. M., æt. 41; married eleven years; four children, last 13 months old. She had never felt well since a miscarriage, over two years before she came under observation. She was for some time under the notice of Mr. Corrie Keep, who found the uterus enlarged; and the catamenia, which occurred regularly once a month, were very free, often lasting for several weeks. There was a swelling in the right fornix, which was slightly tender; it increased in size, whilst the uterus was reduced after the treatment to its normal size, decidua being removed by scraping. The patient complained of severe pain in the right iliac fossa and sacral region.

Operation, 21*st January* 1897.—I removed a cystic tumour of the right ovary as large as a Tangerine orange. There were no adhesions nor evidence of inflammation. The tube was free from disease. The left ovary was perfectly healthy, and was left alone; yet it is remarkable that five months later the patient complained of flushings, and of feelings of faintness, as occur in the real or premature menopause. The period was regular.

In this case there was, I suspect, pure coincidence of endometritis and incipient cystoma of the ovary. The former was due to retained fragments of decidua, and the uterine hæmorrhages had nothing to do with the cyst. It is very doubtful if a cystoma, or any tumour save papilloma, can be set growing by inflammatory changes in its neighbourhood; the question cannot safely be discussed in relation to any single case. The fact that the cyst was tender is no proof that it was inflamed, as there was tenderness in Case 1, where no inflammation was present. In that instance the cause seemed clear, in the present case it remains uncertain.

The last case is an instance of true myoma of the ovary, a rare disease.[1]

Case 6.—A. B., æt. 27; single, lame in the left leg from infantile paralysis; began to suffer early in the spring of 1897 from severe bearing-down pains. Early in September they grew so violent that she took to her bed. The catamenia appeared about every twenty-fourth day; the

[1] Davenport claims a fibro-*myoma* in his series (Case 6). "Dr. Whitney's report says: It is a fibro-myoma. The outer wall is composed of a dense, fibrous structure, and within is a loose connective tissue growth, gradually passing into the centre, where the cells are separated by *a soft gelatinous substance* for quite a distance." Not a word is said about plain muscle cells, and Dr. Whitney's note on "gelatinous substance" clearly indicates that *myoma* is a misprint for *myxoma*. Amongst other writers who have removed myomata of the ovary, are Dr. C. H. Carter (*Trans. Obst. Soc. London*, 1887, vol. xxix. p. 190), and Dr. Brigg's Case 1 (doubtful), *loc. cit.*).

interval tended to grow less since the illness set in. The show was moderate, a little increased since the spring, and there was much pain during the first two or three days. On 27th November, Dr. Percy Boulton removed the posterior lip of the cervix, which was enlarged and contained a small cyst. On exploring the pelvis, he then suspected

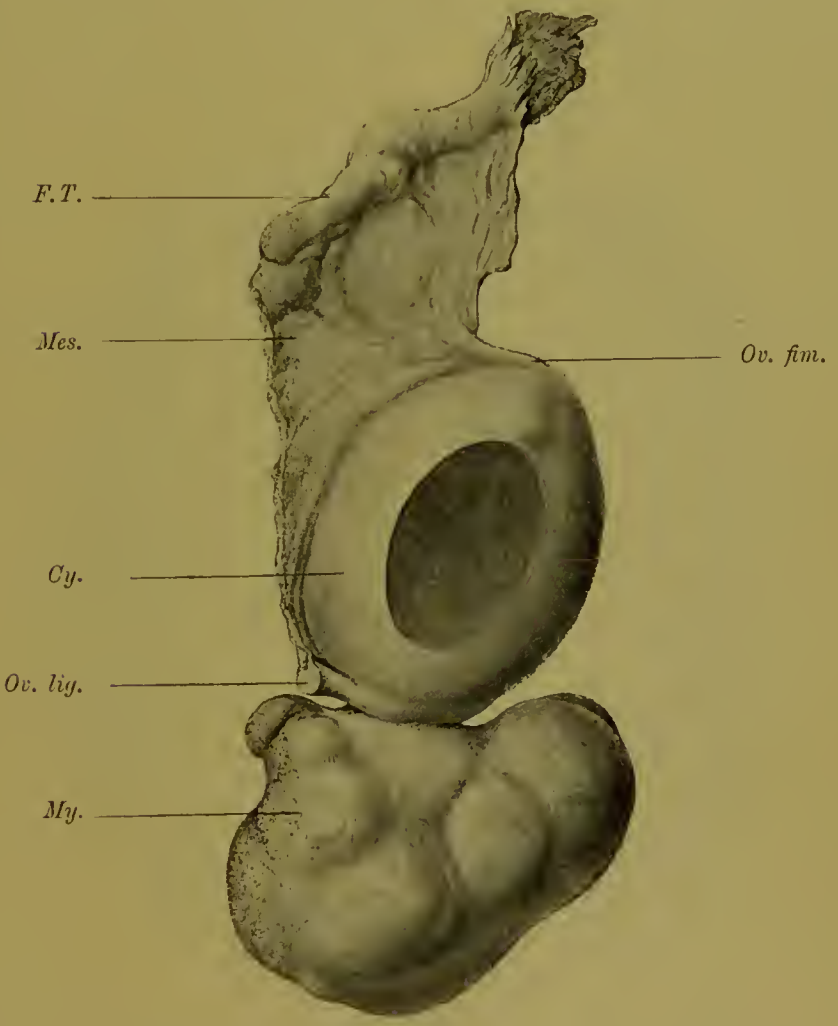


FIG. 1.—Myoma of the ovary, Case 6 (nat. size.) *F.T.* Fallopian tube. *Mes.* Mesosalpinx, not involved in the growth. *Cy.* Ovarian cyst. *Ov. fim.* Ovarian fimbria of the tube passing on to the cyst. *Ov. lig.* Ovarian ligament, divided at operation close to uterus. It runs directly into the junction of the cyst to the vagina. *My.* Solid myoma, showing the groups of myomatous nodules (as often seen in interstitial uterine fibroids) of which it was made up.

that there was a new growth in Douglas's pouch, rather than inflammatory disease, such as had previously been suspected. Dr. Boulton transferred the case to me for operation.

The uterus was 3 in. long, and retroflexed. In the left fornix was

a hard oval mass, quite movable, and in Douglas's pouch a more elongated elastic mass, apparently connected with the former.

The operation, performed on 14th December 1897, was perfectly simple. I passed my hand into Douglas's pouch, and drew up the curious double tumour here figured. It sprang from the right side of the uterus. I was struck with the great hypertrophy of the ovarian ligament (Fig. 1, *ov. lig.*), and carefully noted its course before I divided it. The left ovary was free from disease. As might have been expected, no complications occurred during convalescence.



FIG. 2.—Myoma of the ovary, Case 6. Microscopic section, prepared by Mr. Shattock at the Museum of the Royal College of Surgeons of England. The plain muscle cells are seen in parts at full length, and elsewhere in section.

The Fallopian tube and the mesosalpinx, as may be seen from the drawing, were quite normal, hence there had been no perimetritis nor salpingitis, and neither tumour involved the broad ligament. The place of the ovary was occupied by an almost uniloeular eyst, $2\frac{1}{2}$ in. in long diameter, and $1\frac{3}{4}$ in short diameter. The ovarian fimbria of the tube (*ov. fim.*) ended on the surfaee of the cyst, just as it naturally ends on the ovary. The ovarian ligament (*ov. lig.*) ran into the lowest and

innermost part of the cyst, at the point of junction with the second and solid tumour, the two tumours touching over a circular area $\frac{7}{8}$ in. in diameter, no pedicle separating them. The drawing shows these appearances very well.

The lower tumour was a heavy, solid body 3 in. in long diameter, $1\frac{3}{4}$ in. in short diameter, and $1\frac{1}{4}$ in. thick. It was very irregular in form and tuberous, like a small potato. It was composed of a capsule of vascular reddish brown tissue, and interiorly of a very tough mass of fibrous structures, arranged in oval and spherical nodules like balls of worsted. This arrangement, so common in interstitial uterus myomata, is not seen in ovarian fibroma. Microscopic sections of one of these nodules were made at the museum of the Royal College of Surgeons. As may be seen from the drawing (Fig. 2), the substance consisted of almost pure plain muscle cells, arranged in an irregular manner. In short, the tumour was a myoma, histologically identical with the common uterine "fibroid."

Thus, in this case, there was some doubt as to whether the pelvic swelling was an inflamed ovary or a solid ovarian tumour. It proved to be the latter, and, what is more, a rare disease, true myoma of the ovary. Clinical evidence of this form of new growth is much to be desired. At present there seems to be no means of diagnosing myoma from fibroma of the ovary. The former is much too rare a disease to be ranked as yet as more than a pathological curiosity; but, as has been the case with many other affections no longer reputed rare, it may often have been overlooked. Observers may fail to recognise plain muscle cells. Only on the high authority of Mr. Shattock do I feel certain that the tumour in my case was a pure myoma. In the case of fibroma of the ovary, we know that microscopists, working at the very same section, have disagreed as to whether cellular elements amidst the fibres represent connective tissue or sarcoma. When, however, the spread of knowledge of histology renders reports of myoma and fibroma more trustworthy, and pathological and clinical records can be safely compared, a means of diagnosis may present itself. That time, however, has not yet come. Hence comparisons are useless; thus, if we begin with the catamenial history, we find ourselves confronted by the fact that, in fibroma of the ovary, the better known of the two forms of tumour, menstruation seems not essentially affected, as I was able to show two years since,[1] Briggs of Liverpool confirming my observations a few months later.[2] Menorrhagia, when present, may be due to the tumour dragging the uterus upwards; but in this communication growths of sufficient size to drag on the uterus lie beyond the limits of discussion; moreover, the dragging has little or nothing to

[1] "Cases of Fibroma of the Ovary and Ovarian Ligament," *Trans. Obst. Soc. London*, 1896, vol. xxxviii. p. 187.

[2] "Fibroma of the Ovary and Ovarian Ligament," *Brit. Med. Journ.*, London, 1897, vol. i. p. 1083.

do with the histology of the tumour. Again, turning to myoma of the ovary, profuse menstruation, we know, is not an essential result of the development of a tumour of that kind in the uterus, as it is not observed in pedunculated subperitoneal fibroids. In my case there was slight increase in the menstrual flow, since the beginning of the illness some nine months before operation, but this might have been due to the cyst on the cervix, or to the patient's sedentary habits. Menorrhagia, from causes unconnected with the ovary, is very common; hence, as in Case 5, coincidence is always possible.

I suspect, however, that myomata are somewhat heavier than the average fibroma, which is often full of soft mucoid tissue. In my case the little tumour was already beginning to cause a feeling of weight in the pelvis. On the other hand, I have already noted that, although often hard and heavy, fibroma of the ovary causes less pain than dermoid, or any other solid or semi-solid ovarian tumour, and pain was absent in five out of eight cases in Briggs' tables. Fibroma of the ovary may cause ascites, it is true; whilst uterine myoma and ovarian semisolid dermoid are seldom associated with fluid in the peritoneum. What, however, is at present to the point is the fact that an ovarian fibroma is rarely recognised till it has risen above the pelvic brim, no previous history of pain being the rule; whilst in the case of myoma under consideration there was pelvic pain, though the tumour and the small cyst above it neither rose above the pelvis nor even pressed on the uterus.

The chief peculiarity of the tumour was its position; for, though it did not spring from the ovarian ligament in any part of its course from the uterus to the ovary, it would appear from its position, as indicated in Fig. 1, that it was developed from some of the plain muscular fibres which undoubtedly exist in that ligament and run into the ovary, and grew away from its origin in the ovarian end of the ligament. It is clear from the drawing that it also grew away from the ovary, which was converted into a unilocular cyst. One result of this irregular condition was, that instead of one tumour there were two, a fact which may account for the pelvic discomfort. Pathologically, also, the tumours are quite distinct in no sense do they form a single cystic myoma.

I have already described a case of fibro-myoma of the ovarian ligament,[1] quite different from the enormous fibroma of the same ligament which I reported a few years later.[2] In 1896, Gessner[3]

[1] "Fibro-myoma of the Ovarian Ligament," *Trans. Path. Soc. London*, 1897, vol. xxxviii. p. 245.

[2] "Fibroma of the Ovarian Ligament, weighing over Sixteen Pounds. Removal: Recovery," *Brit. Med. Journ.*, London, 1889, vol. i. p. 1287.

[3] *Ztschr. f. Geburtsh. u. Gynäk.*, Stuttgart, 1896, Bd. xxxiv. S. 297. Pfannenstiel, in Veit's "Handbuch" (see footnotes to Case 2), once removed a fibroma of the ovary as big as a fœtal head; the ovary hung laterally from it, like an appendix. He thinks that a tumour in this position, on the median aspect of the rest of the

described another case, interesting as compared with the myoma here figured. He found a pure myoma of the size of a bean in the ovarian ligament, equidistant from the uterus and ovary. The latter organ was the seat of a fibroma. Gessner believes that a myoma of the ovarian ligament might invade a healthy ovary and convert it into a myoma of the ovary, an opinion I have always held, and justified by the condition seen in the case under consideration.

I will conclude with a few general considerations on these six cases. Menorrhagia and pain with pelvic swelling are the most prominent features in chronic oöphoritis. Yet profuse menstruation is by no means constant; I have found it absent in patients where the clinical symptoms and ultimate disappearance of pain and swelling proved that the disease was inflammatory, and also in patients where pyosalpinx complicated the ovarian inflammation, and an operation was ultimately necessary. In other words, neither mild nor severe oöphoritis is necessarily accompanied by menorrhagia. When that complication is present, it may be due to other causes. In my own Case 5 a cystoma was present, and there were retained fragments of placenta in the uterine cavity. I have seen precisely similar coincidences when chronic oöphoritis existed. Pregnancy may occur in the course of that disease, and uterine hæmorrhage due to traces of placenta after delivery is quite possible.[1]

Turning to small ovarian tumours, there is much greater uncertainty as to the significance of hæmorrhages. Pozzi has noted menorrhagia in cases of cysts impacted in the pelvis. It was absent in my Case 1, which was incarcerated in Douglas's pouch. Coe and Tait note the association of menorrhagia with small ovarian cysts. Davenport comments on the observations of these three observers, but admits that in his ten cases the symptom was not invariably present; I find it specified in six, and following no apparent rule. Thus menstruation was normal in his third case, where the cyst had to be enucleated, whilst it was scanty in the second, where there was a small dermoid as in my Case 2. On the other hand, evidence as to the state of the uterus is defective in Davenport's last three cases. I agree with his opinion that adhesion of an ovarian tumour to the uterus is often accompanied by menorrhagia.

In my six cases, which I have carefully selected, there was true menorrhagia in two (Nos. 3 and 5), but the symptom was traceable to a distinct cause other than ovarian enlargement. In one (No. 6) there was slight increase in the catamenial flow, but

ovary, probably originates as a fibroma or fibro-myoma of the ovarian ligament; his case probably resembles mine. He admits that myoma of the ovary is rare, noting four cases, but remarks that there are plenty of plain muscle cells in the stroma of the adult ovary.

[1] I need hardly say that it is not always easy to distinguish menorrhagia from metrorrhagia.

this was not evidently due to the myoma which existed. In one only (No. 2) the period was absolutely regular; the tumour was a dermoid. In two (Nos. 1 and 4) it was scanty, and in one of these it must be remembered there clearly had been inflammatory changes in the ovary, so generally supposed to be indicated by menorrhagia.

Turning to pain, it will be seen that it was present in all my cases, but the cause was not uniform, as I have explained already in my observations on each case.

Thus, there is at present no special symptom nor group of symptoms by which a small ovarian tumour in the pelvis can be distinguished from an inflamed ovary. The tumour may be painful to touch, whilst a prolapsed ovary enlarged from inflammation may be almost free from tenderness. It is only careful clinical research that can offer us any chance of solving the problem. The patient must be carefully watched, and the effects of medication duly observed. When rest causes pain to diminish, whilst the pelvic swelling increases, the evidence that the ovary is cystic and not inflamed will be strong, yet, as my cases show, not conclusive.

ON THE ILLUMINATION OF THE AIR SINUSES OF THE SKULL, WITH SOME OBSERVATIONS UPON THE SURGICAL ANATOMY OF THE FRONTAL SINUSES.[1]

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(Plates XV., XVI.)

(*Concluded from page* 374.)

Frontal sinus.—For the purpose of illumination, the vulcanite plate used for the tongue is removed from the lamp, and a short tube, projecting slightly beyond the lamp, and made of india-rubber, bone, or ivory, carefully blackened, is fitted over it, so that the light is transmitted in one direction only, namely, from the open end of the funnel. Unfortunately, there is a considerable amount of heat conducted both through the covering and directly from the glass of the lamp to the skin of the person under examination, rendering any prolonged application of it impossible. Cork soon smoulders, on account of the heat, and is not serviceable. The open end of the tube is applied to the floor of the sinus, *i.e.* the roof of the orbital cavity, a short distance above, and slightly external to, the inner canthus of the eye. The application requires a certain amount of care, if the best results

[1] A lecture delivered before the Royal College of Surgeons, Edinburgh, 25th February 1898. The methods of illumination were demonstrated, and variations in the anatomy of the frontal sinuses were illustrated by lantern slides.